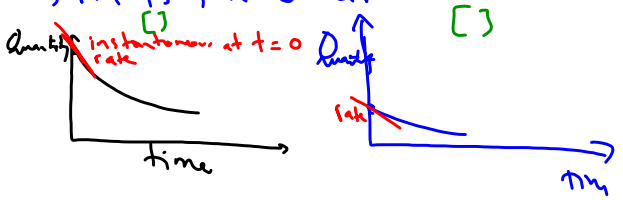
Rate Law:

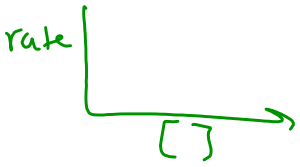
- Relationship between initial rate (before reverse reaction starts...) of a reaction and the concentration of reactants.

ex: $C_2H_5Br_{(g)} \rightarrow C_2H_{4(g)} + HBr_{(g)}$

$r = k[C_2H_5Br]^m$

→ m is the order

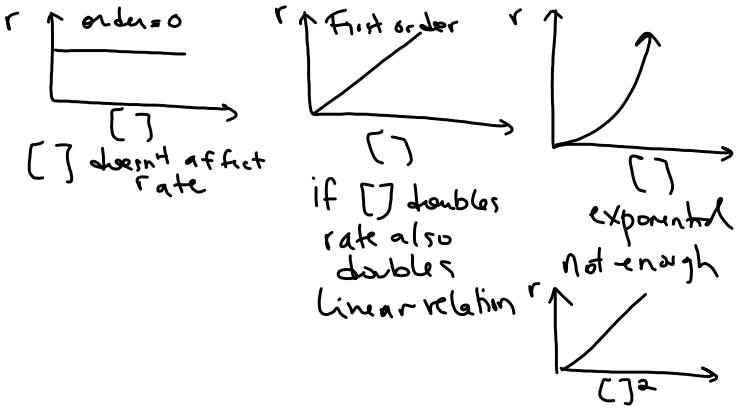




$r = k[\text{reactant}]^m$

$y = m(x)^1$

$y = a(x)^2$



$y = mx$

$x = [\,]^2$

$\frac{\text{rate trial 1}}{\text{rate trial 2}} \quad \frac{r_1 = k[A]^m[B]^n}{r_2 = k[A]^m[B]^n}$

$\frac{1.880}{0.470} = \frac{k(0.720)^m(0.720)^n}{k(0.720)^m(0.180)^n}$

$4 = 4^n$

$n = 1$

First order for B

$\log 4 = \log 4^n$

$\log 4 = n \log 4$

$n = \log 4 / \log 4$

$\frac{r_1}{r_3} = \frac{0.470}{0.117} = \frac{k(0.720)^m(0.180)^n}{k(0.360)^m(0.180)^n}$

$4.0 = 2^m$

$m = 2$ second order for A

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Feb 23-1:53 PM